the October 1993 Telecommunications Policy Research Conference, at 10.) The fact that access fees exceed costs is even noted in the 1996 *Economic Report of the President* (at 177).

An approach based on interstate access charges has been employed in one state, Florida. Bell South, GTE and some potential competing LECs negotiated an agreement that was approved by the state regulatory agency. The agreement calls for a transport and termination rate based on terminating switched access rates, excluding the Residual Interconnection Charge and Carrier Common Line Charge. The resulting rate is 1.05342¢ per minute. (Florida Public Service Commission, Prehearing Order, docket No. 950984-TP, issued January 4, 1996. Under the agreement in Florida, a LEC does not have to pay for transport and termination of more than 105% of the minutes terminated by the LEC that terminates the fewest minutes on the network of a connecting LEC. Thus, the transport and termination charges will effectively be zero for additional minutes of traffic. LECs who are not covered by this agreement are currently under a bill and keep agreement mandated by the state regulatory agency.) As will be seen below, this rate is higher than those set in the few other states that have transport and termination rates.

Nor are Open Network Architecture (ONA) rates an adequate basis for setting proxy rates. These rates were not developed in a way that would lead them to have any systematic relationship to TSLRIC. Rather they come from a rate-of-return style regulatory scheme with later adjustments through a price cap. Furthermore, these rates were set in a way that allowed incumbent LECs broad discretion to include not only direct but also overhead costs. ("Report and Order and Order on Further Reconsideration and Supplemental Notice of Proposed Rulemaking," July 11, 1991, ¶43-44.) Thus, these rates are unlikely to have any relationship to incremental costs.

The Commission should reject proxies based on rates charged to CMRS carriers

Rates that ILECs charge CMRS carriers for transport and termination are set in an environment where there is little or no regulatory oversight and generally no competition from other CLECs. Thus, these rates are likely to be inflated by the monopoly power of the incumbent LEC. Moreover, because many CMRS carriers are part of the same company as the LEC, these rates often are for an internal transaction. And where they are not, these rates may be charged instead to a competitor of the ILEC's own cellular subsidiary, so the ILEC will have an incentive to charge a high rate to increase the competitiveness of its subsidiary.

The structure of the transport and termination agreements between ILECs and cellular systems shows that these agreements reflect the market power of the ILECs. In a recent survey, all the cellular systems that responded paid the ILECs for terminating traffic originated on their system, but only a small minority, 10 percent, were paid by the ILEC for terminating traffic that originated on the ILEC's system. In fact, some cellular systems paid the ILEC for originating calls that terminated on the cellular system. (Brenner and Mitchell, "Economic Issues in the Choice of Compensation Arrangements for Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers," prepared for the Cellular Telecommunications Industry Association by Charles River Associates, March 4, 1996, at 8.) Rates charged CMRS carriers are not an adequate basis for setting proxies for transport and termination.

Little information is available on transport and termination arrangements among neighboring ILECs

Contacts with a number of state agencies have found that data on rates charged neighboring LECs are unavailable. Transport and termination charges between neighboring LECs are widely believed to be handled on a bill-and-keep basis. Because information about these arrangements is not publicly available, however, it is impossible to confirm this belief. (Information is available that shows that neighboring LECs use a bill and keep arrangement in Connecticut. "Response of Southern New England Telephone Company to Interrogatories of the Office of Consumer Counsel," Docket No. 94-10-02, Connecticut Department of Public Utility Control, response to question No. OCC 9, April 26, 1995.) LECs have information about these rates, but they have not released it. The inaccessibility of this information reduces its desirability for use as a proxy. Of course, there are independent reasons for the Commission to adopt bill-and-keep as an interim arrangement for transport and terminations between ILECs and competing facilities-based CLECs. (See the affidavit of Michael Katz.

One state, however, seems to be using rates charged neighboring LECs as a proxy for some CLEC/ILEC rates. Oregon requires that ILECs must offer ancillary services to their competitors at the same rates, terms, and conditions as they offer them to independent LECs. (NARUC op. cit. at 106.) This requirement effectively uses the rate charged neighboring LECs as the proxy for the rate to be charged competing LECs.

The experience of those few states that have tariffs or proposed tariffs provides some information that is helpful in developing proxies

Rates in actual or proposed tariffs are the most promising basis for determining proxies without a cost study. As the ILEC often has agreed to these rates, they presumably are not below the ILEC's TSLRIC. The risk does exist, however, that the rate will be substantially above TSLRIC, particularly because a number of these tariffs have not been finally accepted by the state regulatory agency. The following summarizes all the information currently available to me on tariffed rates on unbundled loops, unbundled switching, and transport and termination.

Unbundled loops

Only a few tariffs separately price loops. A particularly detailed example of such a tariff is the one that Southern New England Telephone proposed to the Connecticut Department of Public Utility Control (CDPUC). (The CDPUC is currently reviewing this tariff.) Rates for loops vary by area; these rates are shown in Table 1. (Besides the rates shown in Table 1; there would be a non-recurring charge of $101.46 in all areas.) Rates from other tariffs and proposed tariffs that price unbundled loops are summarized in Table 2. The rates are often different for residential and business loops, and they are not consistently lower for either one.

Table 1: Proposed SNET annual charge for a 2-wire voice-grade analog loop

Metro	$144.00
Urban	$198.00
Suburban	$228.00
Rural	$264.00

Unbundled switching

The SNET proposed tariff and the Maryland interim tariff are the only ones I have been able to find that includes a separate charge for switching. The SNET tariff suggests a cost per port of $71.08 (non-recurring) plus $1 90 per month and a usage charge of .8¢ per minute for the originating port only. The Maryland tariff has a per month fee of $1.19 for offices serving over 650,000 stations, which are found in more-densely populated areas, and $1.02 for offices serving fewer stations. Non-recurring charges, including collocation charges, have not been developed, but Bell Atlantic is required to develop those charges within 120 days of receiving a valid request for an unbundled port. As of yet, Bell Atlantic has received no such request. In addition to the monthly fee, the per-minute transport and termination rate of .3¢ per minute for an end office and .5¢ per minute for a tandem switch applies to traffic through the port.

Table 2: Annual charges for unbundled loops

	Residential	Business
Maryland		
Rate Group A		$204.82
Rate Group B		$235.90
Michigan	$132.00	$96.00
BellSouth Proposal	$300.00	$300.00
GTE Proposal	$317.40	$317.40
U.S. West Proposal		
Zone 1	$192.00	$163.08
Zone 2	$539.28	$510.36
Ameritech Proposal		
Minimum	$55.08	$87.36
Maximum	$145.68	$175.80
Frontier (Rochester N.Y.)	$173.40	$99.48

Sources:

Maryland: interim tariff filed April 12, 1996 by Bell Atlantic. These rates include a monthly charge for virtual collocation equal to one twenty-fourth of the charge for a DS1 cross connection. In addition, there will be non-recurring charges for virtual collocation including a charge for site augmentation of $963, if the competing LEC is already collocated at the site to terminate long-distance traffic. If the competing LEC is not already collocated, this fee will be higher. In addition, there will be a non-recurring charge of $775.61 for the first DS1 installation and $439.61 for each additional. Maryland does not yet have a tariff for physical collocation. Each unbundled loop will also involve non-recurring charges for order processing and installation of $98.50. Maryland has no rates for residential loops. Rate Group A is for offices serving over 650,000 stations. Rate Group B is for offices serving fewer stations. **Michigan:** tariff filed by Ameritech with the Michigan PSC, Tariff M.P.S.C. No. 20R, part 21, Section 2, sheet 66. **BellSouth:** Proposed tariff effective July, 1, 1996, at 49.1; there is a non-recurring fee of $71. Submitted to the Georgia PSC by letter from Thomas Hamby, docket 6420, January 25, 1996. GTE: Section 3.2 of a tariff proposed to the Washington Utilities and Transportation Comm., January 26, 1996. This tariff is not yet effective. **U.S. West:** Section 16.4.3 of a tariff proposed to the Washington Utilities and Transportation Commission, January 26, 1996. This tariff is currently suspended. In addition to the monthly rates shown above, there would also be a non-recurring charge of $50. U.S. West believes that these rates exceed TSLRIC. **Ameritech:** tariff filed with the Illinois Commerce Commission. **Other** data in this table are from Hatfield Associates Inc., "The Cost of Basic Network Elements: Theory, Modeling, and Policy Implications," March 1996, at 11-12.

Transport and Termination

The great majority of states have yet to set tariff rates for competing local exchange carriers to terminate traffic on each other's networks. A number of states have adopted a bill-and-keep policy on an interim basis. These states are California, Connecticut, Oregon, Utah, and Washington. (The bill-and-keep plan in Utah is an interim agreement between U.S. West and Electrical Light Wave.) Bill and keep is also used in Florida for those LECs that have not yet reached an agreement on transport and termination rates. The plan applies only to those two companies and is valid until the Utah commission adopts an official policy.) In addition, the commission staff in Arizona and administrative law judges in Pennsylvania and Tennessee have recommended bill-and-keep, but the state commissions have not adopted the policy. Rates for those states that have tariffed traffic termination on a non bill-and-keep basis are shown in Table 3.

As can be seen in the table, the structure of these tariffs varies from state to state. Because termination at the tandem switch is likely to involve additional switching and more transport than termination at the end office, some states charge more for tandem office than end office termination. The New York tariff sets rates that vary by time of day. The other tariffs do not, although the costs of transport and termination may vary greatly with time of day.

Table 3: Rates for terminating traffic

	Termination at End Office	Termination at Tandem Office
	(cents per minute)	
California	.7500	.7500
Illinois	.5000	.7500
Florida	1.05342	1.05342
Georgia	.4326	.5026
Maryland	.3000	.5000
Michigan	1.5000	1.5000
New York Minutes of Use Tariff		
Day	.7400	.9800
Evening	.3400	.7300
Night	.2700	.2900
New York Flat Rate Tariff	(dollars per month per DS1 Port) $950	$1710

Notes:

California: The rate is from a reciprocal call termination agreement between Pacific Bell and MFS Communications. The rate does not apply to other carriers.

Florida: FPSC Prehearing Order, docket No. 950984-TP, issued January 4, 1996.

Georgia: The end office rate for Georgia is identified as being for interconnection. The rate shown for tandem office is the sum of the interconnection rate and a charge for access tandem switching. There are also separate non-recurring charges for line installation. Georgia rates are from a proposed tariff with an effective date of July, 1, 1996, at 49.1. Bell South submitted this proposed tariff to the Georgia Public Service Commission by letter from Thomas Hamby, docket 6420, January 25, 1996.

Michigan: Payment will only be made if traffic volume terminating on one party's network exceeds traffic volume terminating on the other party's network by 5 percent. Fee is for local switched traffic, which appears to include both end-office and tandem termination.

New York: Flat rate and minutes of use tariffs are independent options that may be chosen by the competing local exchange carrier.

Avoided costs for establishing wholesale discounts to resellers of local exchange service

As noted at ¶183 of the Notice the California Public Utilities Commission (CPUC) recently established interim wholesale rates based on its identification of the costs "attributable" to the retailing functions. Based on these calculations, the CPUC required Pacific Bell to offer a 17 percent discount below retail business rates and a 10 percent discount below its retail residential rates. Smaller discounts were established for GTE. While these discounts were purportedly based on the retailing costs that will be "avoided" by Pacific in the provision of wholesale services, they are in fact, based on nothing other than judgmental "allocations" of the historical operating expenses reported by Pacific on its Annual Form M. Indeed, rather than calculating avoided costs, the CPUC seems to have estimated the fully allocated costs of avoided services.

The CPUC's determination of the "avoided" costs of retail services begins with a review of a cost study that was sponsored by an IXC witness. That study divides Pacific's expenses plus return and taxes into six categories and develops percentage "allocation factors" to determine the extent to which each of the six categories of historical cost should be considered "retail." For example, the study finds that 100 percent of Pacific's uncollectibles expenses could be characterized as retail expenses while only 7.6 percent of Pacific's maintenance expenses were "retail". Based on these determinations, the study concludes that, in total, 28 percent of Pacific's costs would be "avoided" at the wholesale level. (See Public Utilities Commission of the State of California's Orders in R. 95-04-043 and I.95-04-044, Item 1, Agenda 2/23/96, hereinafter CPUC Order.)

In its interim order, the CPUC rejects aspects of these calculations but retains the IXC study's overall methodology. The net result of the CPUC's revisions is shown in Table 5 under the heading "CPUC Calculations". As the Table indicates, the CPUC's changes resulted in a finding that 17 percent, rather than 28 percent, of Pacific's expenses were costs that would be avoided if local exchange service were supplied through resellers.

Table 5: Pactel avoided retail costs

(Dollars in thousands	CPUC calculations		Alternative calculation	
	Allocation Factor		Allocation Factor	
Retail Depreciation Exp.	0.050	$82,834	0.050	$82,834
Retail Return and Taxes	0.050	$72,322	0.050	$72,322
Retail Maint. Exp.	**0.269**	**$529,731**	**0.050**	**$98,682**
Retail Mktg and Customer Svs. Exp.	0.269	$362,231	0.269	$362,231
Retail Uncollectible Exp.	0.269	$29,580	0.269	$29,580
Retail Support Exp.	0.269	$95,897	0.269	$95,897
Total Retail Exp.		$1,172,595		$741,546
Total Exp.		$6,867,068		$6,867,068
RETAIL EXPENSE AS PERCENT OF TOTAL:		**17.08%**		**10.80%**

The CPUC's calculations do not reflect the economic significance of the avoided cost standard. The CPUC analyzed historical costs rather than the forward-looking called for by the 1996 Act. The Act demands an assessment of the costs that "will be avoided," by the ILEC. There simply is no reason to believe that historical categories of accounting data bear any relationship to the forward-looking "avoided" costs that the 1996 Act envisions.

The CPUC's calculations clearly result in an excessive wholesale discount. As I illustrate in the "Alternative Calculation" in Table 5, the correct avoided cost discount is certainly no greater than 10 percent. I conservatively (from the point of view of minimizing the socially costly error of establishing too great a discount) assume that all of the calculations made by the CPUC are correct, save one. The CPUC estimated that 26.9 percent of Pacific's maintenance expenses were "avoided" retail costs. This particular assumption was far less conservative than the IXC proposal. The IXC expert had recommended that maintenance expenses be allocated to retail in the same way as depreciation expenses. More importantly however, the CPUC completely ignored Pacific's own plausible admonition that "...maintenance and support expenses are not avoided in the offering of wholesale services." (CPUC Order at 30-31.)

Ignoring for the moment Pacific's contention, we might conservatively assume that some minor maintenance expenses would be avoided in a wholesale environment. My calculations illustrate the effect of substituting a 5 percent allocation factor for the CPUC's 26.9 percent factor. This 5 percent factor is the same allocator used by the CPUC to estimate "avoided" depreciation, return and taxes. As shown in Table 5, this single change reduces the CPUC estimate of Pacific's retail expenses from 17 percent to 10.8 percent.

Of course, one might also reasonably assume that Pacific is right and that no maintenance expenses would be avoided in the company's provision of wholesale services. In this event, the CPUC's retail percentage for Pacific would fall to 9.36 percent. (The CPUC set a lower discount rate for residential service, based on its finding that residential service was already priced below fully allocated cost.)

The California experience serves to demonstrate the extent to which individual state commissions might depart from the requirements of the Act with respect to calculations of wholesale discounts.

In Illinois, Ameritech originally signed contracts with two competitors that included undiscounted and discounted wholesale rates. The discounted wholesale rates included rate reductions based on volume and term length. Subsequently, Ameritech's entire wholesale rate schedule was made generally available and it became effective on February 1 1996.

Ameritech's wholesale rates average approximately 6 percent (residential) and 10 percent (business) below the company's undiscounted retail rates. While the company's volume and term discounted wholesale rates average between 15 percent and 20 percent below Ameritech's non-discounted retail rates, this difference cannot not be used to set an avoided cost proxy because volume and term-discounted wholesale service is not strictly comparable to undiscounted retail service.

Proxies based on generic cost studies

The Commission also requests comment on the possible use of generic cost studies, those that do not take account of differences in local conditions, as a means of establishing proxy rates. These studies have the substantial advantage of not relying on proprietary data. Thus, the workings of these models can readily be made transparent to all parties in a proceeding. Moreover, because such studies do not have to be redone for every set of circumstances encountered throughout the nation, their use would not impose the long delays involved in basing rates on TSLRIC and avoided cost models using full information. In fact, several generic cost studies have been done.

The two models mentioned in the Notice, the Benchmark Model and the Hatfield Model, are the most recent examples of such studies. ("Benchmark Cost Model," A Joint Submission of MCI, NYNEX, Sprint, and U.S. West, CC Docket No. 80-286, December 1, 1995; and Hatfield Associates Inc., "The Cost of Basic Network Elements: Theory, Modeling, and Policy Implications," March 1996.)

Although the Benchmark Model may provide useful information, it is not designed to determine proxy prices for transport and termination and unbundled elements, and its usefulness for that purpose is limited. The model's purpose is to find areas where the cost of service is high enough to require support to preserve universal service. It is for residential lines only. The Benchmark Model estimates the cost of providing basic telephone service in a Census Block Group (CBG). The costs calculated are benchmarks, not the actual costs of any phone company. (A detailed critique of the Benchmark Model is in Baldwin and Selwyn, "The Cost of Universal Service: A Critical Assessment of the Benchmark Cost Model," Economics and Technology Inc., April 1996.)

The model does all cost calculations in terms of investment. Once the necessary investment has been estimated, the model uses an annual cost factor. The model presents two different cost factors: one, based on historical accounting data and total expense levels of Tier 1 LECs, is 32 percent; the other, based on an approach used by Hatfield Associates, is 23 percent. These factors, and particularly the first, include an allowance for overhead. Thus, the model seems likely to overestimate incremental costs.

The Benchmark Model uses certain other assumptions that may lead it to overestimate costs. The model derives the cost of hooking each CBG to the pre-existing network, specifically the nearest wire center. Thus, the model develops the least-cost structure of loops, as-

suming the currently-existing set of wire centers. This approach, sometimes called the scorched node method, necessarily reflects historical rather than foreword-looking planning. The method generally produces higher switching costs than a scorched earth or greenfield method, which allows the model to develop the least-cost network configuration regardless of the network that is already in place. Moreover, the model uses dated information on switching costs that are based on only one model of switch, a model that may be inappropriate for some areas. The model also assumes that households are evenly distributed in the CBG, whereas a more realistic uneven distribution of households might lower costs, especially in rural areas.

The Hatfield Model is designed to estimate the TSLRIC of switches and loops. The model includes some overhead expenses, but it tries to include only those overhead expenses that are incremental. Like the Benchmark Model, the Hatfield model assumes that the population is evenly distributed in the study area. The Hatfield model can be adapted for local conditions, and it has been used to estimate costs in specific states. These estimates have been presented in state regulatory proceedings.

Unlike the Benchmark Model, and many other cost models, the Hatfield model uses a greenfield, or scorched-earth method. This method has significant advantages. It allows the model to assume the best available technology: digital switching, digital loop carrier equipment, optical fiber feeder cables for longer loops, and Signaling System 7. Moreover, the use of a greenfield methodology is the only way to insure that the estimated costs are not inflated by past inefficient decisions on network investment.

Because it was specifically designed to estimate TSLRIC and because it uses greenfield assumptions, the Hatfield Model is well-suited to

developing proxies. Moreover, as will be described below, the model is generally consistent with various proposed tariffs and with earlier cost studies. Of course, the model can, and in the future no doubt will, be improved. Nonetheless, the Hatfield Model's results can be a valuable input into the establishment of proxy prices.

Estimated loop costs

Estimated Loop Costs from the Hatfield Model are shown in Table 6. This model computes loop costs based on six population density zones. As can be seen, these estimates vary significantly with the population density of the area involved.

Table 6: Estimated annual loop costs from the Hatfield Model

Population per square kilometer	Dollars per Year
0-10	$490.68
10-100	$394.68
100-500	$106.68
500-1000	$79.44
1000-5000	$74.40
Over 5000	$63.60
Average	$166.08

The Hatfield loop cost estimates may be compared to estimates from three earlier studies: a 1990 study by Bridger Mitchell, a study for the state of New Hampshire by New England Telephone of incremental costs in 1993, and the Benchmark Model. (Bridger M. Mitchell, "Incremental Costs of Telephone Access and Local Use," Rand, July 1990; "1993 New Hampshire Incremental Cost Study," done by New England Telephone, a NYNEX Company, and submitted to the New Hampshire Public Utilities Commission, April 30, 1993; "Benchmark Cost Model," op. cit.) The Mitchell study estimates loop costs under three different scenarios involving popula-

tion growth and density. Estimates of loop costs from these models are summarized in Table 7. These results are generally within the range of estimates found in the Hatfield study. Mitchell's estimates for high-density areas are exceptions, they are lower than the Hatfield estimates. Mitchell's estimates may be lower because his study was done before the others and uses 1988 prices. The general consistency of Hatfield's results with those of earlier studies increases confidence that the Hatfield results do not seriously understate LEC costs.

Table 7: Estimates of annual incremental costs of a loop

New Hampshire Study	$72.36
Mitchell Study	
Low Growth, Low Density	$171.50
Medium Growth, High Density	$45.00
High Growth, High Density	$31.00
Benchmark Model	
Average, 32% Cost Factor	$180.84
Average, 23% Cost Factor	$131.16

Note: Costs in Mitchell's study are evaluated using 1988 prices. Mitchell estimates a range of maintenance costs in his study. The estimates in the table use the midpoint of this range.

Estimated switch costs

The cost of a switch, as estimated by Hatfield, has two components: a fixed cost for the port on the switch, and a cost per minute of use. Hatfield estimates the annual port costs at $12.24 per line, and the usage costs at .18¢ per minute. The Hatfield study sizes the switch using busy-hour traffic, but it bases its cost on an average over all times of day. The Hatfield study notes that its estimates of switching costs are lower than those presented in previous studies. The greenfield assumption of the Hatfield model lowers switch costs. Many

other studies, including the New Hampshire study, take parts of the existing network as given. For example, the New Hampshire study finds a port cost of $11.88, which is very close to the Hatfield result, and a cost per minute of .0633¢

Estimated transport and termination costs

Estimates of the cost of transport and termination from the Hatfield study and a number of other studies are shown in Table 8. Only the Hatfield study differentiates between transport and termination at the tandem switch and transport and termination at the end office. (The cost of transport and termination at the end office was estimated using the Hatfield model by taking the switch usage charge of .18¢ per minute and multiplying it by the ratio of total switching costs to usage switching costs. This method was used to convert the port costs to a per minute basis. The cost of transport and termination at the tandem switch was determined by adding the cost of tandem switching and the cost of one leg of common transport to the cost of the end office transport and termination.) Tandem access cost estimates are higher because a call delivered to the tandem switch requires two switching operations, one at the tandem and one at the end office, and transport from the tandem to the end office. The cost estimates shown in Table 8 from the New York, New Hampshire, Pacific Telesis, Marcus-Spavins, and USTA (United States Telephone Association) studies are identified as being costs for switched access, which apparently refers to transport and termination at a tandem switch. The Cox Enterprises estimate is for terminating traffic at the end office.

Three of these studies have particularly high estimates of transport and termination costs, 1¢ or more: the New York, Marcus-Spavins, and USTA models Not only are the cost estimates from the New

York model very high, but the day and evening rates for New York in Table 3 are below the costs of switched access for New York shown in Table 8 That is because the rates shown require collocation, and generally a port on the switch itself, whereas the costs just assume delivery to the serving wire center. Collocation, which reportedly now is the more common transport and termination arrangement in New York, reduces the terminating carrier's costs. Thus, the cost estimates from the New York model should not be relied on because they do not reflect actual practices in that state. The Marcus-Spavins estimate is presented as a mere rule of thumb. The USTA did not do an independent analysis of costs, but instead reviewed a number of earlier studies and then deliberately used the high estimates from the earlier studies to be conservative for the purposes of its study. (Monson and Rohlfs, "The $20 Billion Impact of Local Competition in Telecommunications," July 16, 1993, Strategic Policy Research paper prepared for USTA, p. 3.)

Table 8: Estimated incremental costs of transport and termination

	(cents per minute)
Hatfield Study	
Tandem Access	.3600
End-Office Access	.2600
New York Study	
Day	1.3400
Evening	1.3000
Night	.2600
New Hampshire Study	
Day	.2354
Evening	.0922
Night	.0217
Pacific Telesis	.6200
Marcus-Spavins	1.0000
USTA	1.3000
Cox Enterprises	.2000

Notes:
The estimate from the Pacific Telesis study is a 24 hour average and for Feature Group B termination. Estimates from Pacific Telesis is from Hatfield Associates, op. cit. at 8-9.
New York estimates are for a mileage band below one mile. Larger mileage bands are associated with lower estimates. Estimates are for Feature Group D, preferred or 1+ access.
Marcus and Spavins present this estimate as a rule of thumb based on earlier econometric work. Marcus and Spavins at 28-29.
The USTA estimate is from Monson and Rohlfs, "The $20 Billion Impact of Local Competition in Telecommunications," July 16, 1993, Strategic Policy Research paper prepared for USTA, p. 3.
The Cox estimate is contained in a letter from J.G. Harrington to William Caton, Acting Secretary of the Federal Communications Commission, October 19, 1995.

If we exclude the three studies that get unusually high estimates, then the Hatfield estimates are within the range of other cost estimates for transport and termination. The Hatfield estimates are lower than the estimate from Pacific Telesis, but that estimate is limited to feature group B termination and so may not be a good esti-

mate of the costs of transport and termination with a competing LEC as opposed to an IXC. The Hatfield results are substantially higher than the estimates from the New Hampshire and Cox Enterprises studies. Thus, a comparison of results with other studies suggests that the Hatfield results are unlikely to underestimate the costs of transport and termination. Moreover, the results of the Hatfield study suggest that transport and termination is not very costly. Thus, this model suggests that bill and keep, with its great advantage of administrative simplicity, is an acceptable interim strategy for setting transport and termination charges.

Establishing proxy ceilings for prices of unbundled network elements, transport and termination, and wholesale discounts

Unbundled loops and loop elements

With respect to local loops, information is available in the form of both rate proposals and cost studies. The rate proposals sometimes differ by local density of population and between residential and business service. In certain states, loop rates have been proposed that do not differ with respect to density. In Michigan, for example, the simple average of proposed business and residence loop rates was $114, while in Rochester N.Y., the simple average of Frontier's proposed business and residence loop rates was $136. Other proposed loop rates do vary by density. In Connecticut, for example, Southern New England Telephone ("SNET") proposed an annual charge for a voice grade analog loop in a "metro" location of $144. In "rural" areas, SNET proposed a loop rate of $264. By contrast, in Illinois, the simple average of Ameritech's proposed "minimum" business and residence loop rates was $71. This value was less than half of the minimum SNET "metro" proposal. In Illinois, the simple average of Ameritech's proposed "maximum" business and residence loop

rates was $161. As with the minimum rate, this value was also much lower than the SNET "rural" rate proposal.

In Illinois, the simple average of the minimum and maximum average loop rates calculated above was $116. This value seems roughly in line with the average Michigan and the Frontier loop rate proposals but much lower than the loop rates proposed by SNET.

In addition to tariff rate proposals, certain studies have analyzed the costs of local loops. These studies have been discussed above. The Benchmark Model produced average, nationwide costs per loop of $131 to $181. By contrast, in a March 1996 filing, the Hatfield Model yielded costs per loop that ranged from $64 to $490. The weighted average cost per loop in Hatfield Model was $166.

While these cost studies show higher average loop costs than the loop rate proposals shown above, much of the difference may be due to differences in averaging conventions. In the Hatfield Model, for example, the lowest cost loops served very dense areas that contained only 8 percent of the units analyzed. The Hatfield Model also produced loop costs of $74 for the next most dense (36 percent of the units analyzed) area studied. Thus, for these "dense" locations, which include many more customers, the Hatfield Model yields loop cost estimates that closely match the "minimum" loop rates proposed in Illinois by Ameritech.

Thus, as with termination rates, there appears to be some consensus as regards reasonable prices for loops. In particular, the Ameritech loop rate proposal and the Hatfield TSLRIC Model seem to be broadly consistent. For this reason, the Commission could choose one of these examples as a basis for proxy rates for local loops. The best choice would be the Hatfield model, because it allows rates to vary to a greater extent with density, which has a significant effect

on costs. On this basis, national proxy rates for local loops (including loop distribution, loop concentration and loop feeder plant) would be the same as the Hatfield cost estimates reported in Table 6.

Switching

The best information available to the Commission for establishing a proxy price ceiling for unbundled end-office switching is from the Hatfield model, an annual fee of $12.24 per line with additional usage costs of .18¢ per minute.

Transport and Termination

The estimates of transport and termination costs from the Hatfield model are also the best information available to the Commission for establishing proxy prices for transport and termination charges: .36¢ for tandem transport and termination and .26¢ for end office transport and termination. These costs are significantly below the rates set in the few state tariffs on transport and termination, although they are reasonably close to the Maryland rates. The rates set in those tariffs, however, generally arose from a bargaining process involving the incumbent LEC. Thus, these rates may be inflated by the incumbent's monopoly power. Moreover, these charges are above the levels set on an interim basis in many other states, which have bill-and-keep arrangements that effectively set a transport and termination rate of zero.

Resale of local exchange service

In determining a proxy number for the wholesale discount during the interim period required to determine avoided costs, the Commission might rely on the only available evidence—the California

discounts discussed above. The evidence from California suggests that the maximum discount should be no more than 10 percent. To the extent that residential service is being resold, and to the extent that residential service is now priced below TSLRIC, the discount for residential resale should be even lower—conceivably negative—to reflect that fact.

A proxy discount in the range of 10 percent is also broadly consistent with the wholesale rates filed by Ameritech Illinois with the Illinois Commerce Commission. In Illinois, Ameritech originally signed contracts with two competitors that included undiscounted and discounted wholesale rates. The discounted wholesale rates included rate reductions based on volume and term length. Subsequently, Ameritech's entire wholesale rate schedule was made generally available and it became effective on February 1, 1996.

Ameritech's wholesale rates average approximately 6 percent (residential) and 10 percent (business) below the company's undiscounted retail rates. While the company's volume and term discounted wholesale rates average between 15 percent and 20 percent below Ameritech's non-discounted retail rates, this difference should not be used to set an avoided cost proxy because volume and term-discounted wholesale service is not strictly comparable to undiscounted retail service. Accordingly, based on the Illinois tariffs, the appropriate avoided cost proxy would be about 10 percent below the comparable retail rate.

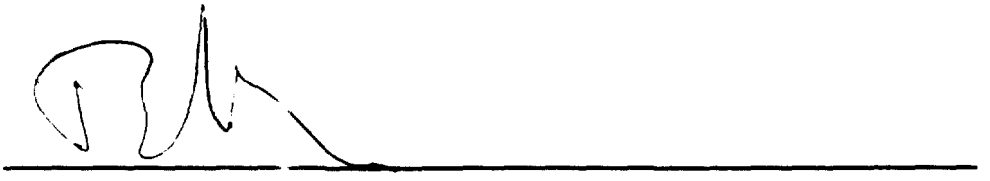
Conclusion on use of proxy rates

The currently available information enables the Commission to use proxies to set rate ceilings for unbundled loops and loop elements, end-office switching, transport and termination, and operator serv-

ices. These proxies are not perfect. For example, it would be better to have proxies for switching and transport and termination that varied by time of day. Moreover, the proxies set costs of switches and transport and termination on a per minute basis, but many local calls are billed on a flat rate. Thus, for a long call, the CLEC could find that its payments to the rival ILEC exceeded the revenue from the call. The Commission may wish to use a measure of average minutes per call to convert these charges to a per call basis.

Despite the drawbacks to establishing rate and discount ceilings using proxies, this method is far superior to any alternative now facing the Commission. The Commission will be able to improve on the proxies set in this proceeding as it and the state regulatory bodies gain more experience with competition in the telephone industry, and as appropriate cost studies become available. If the Commission does not establish proxy-based rate and discount ceilings, however, the advent of competition in this industry will be seriously delayed.

I declare under penalty of perjury that the foregoing is true and correct.



Bruce M. Owen

May 16, 1996